

TEXAS

PARKS &

WILDLIFE

Evaluation of DMF West on Brazos shiners

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July 17, 2012



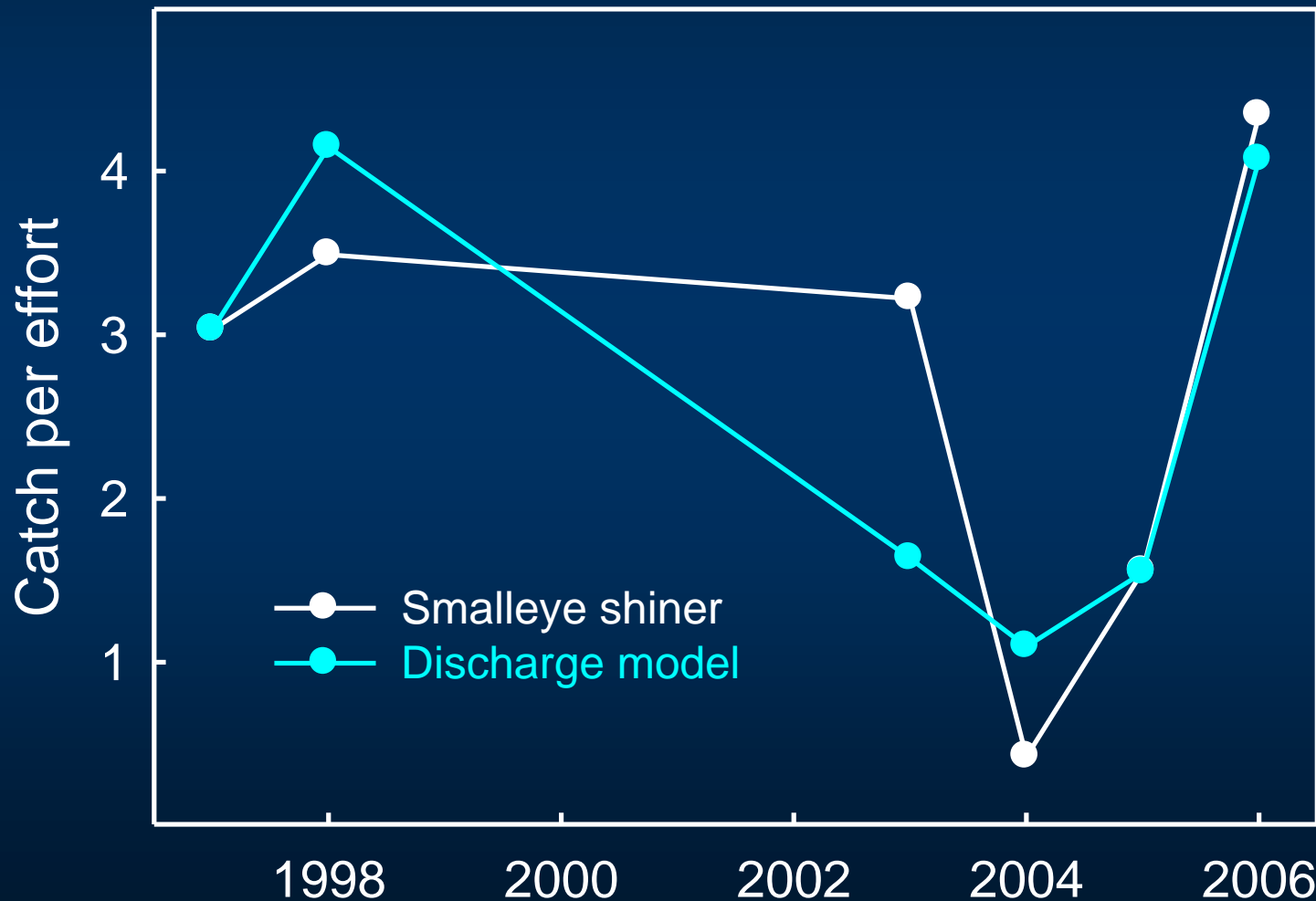
Durham and Wilde (2009) modeled smalleye shiner population in upper Brazos River

- **Used mean summer discharge (May-Sept) for Brazos River at Seymour**



Smalleye shiner

Population-Discharge Model Brazos River at Seymour



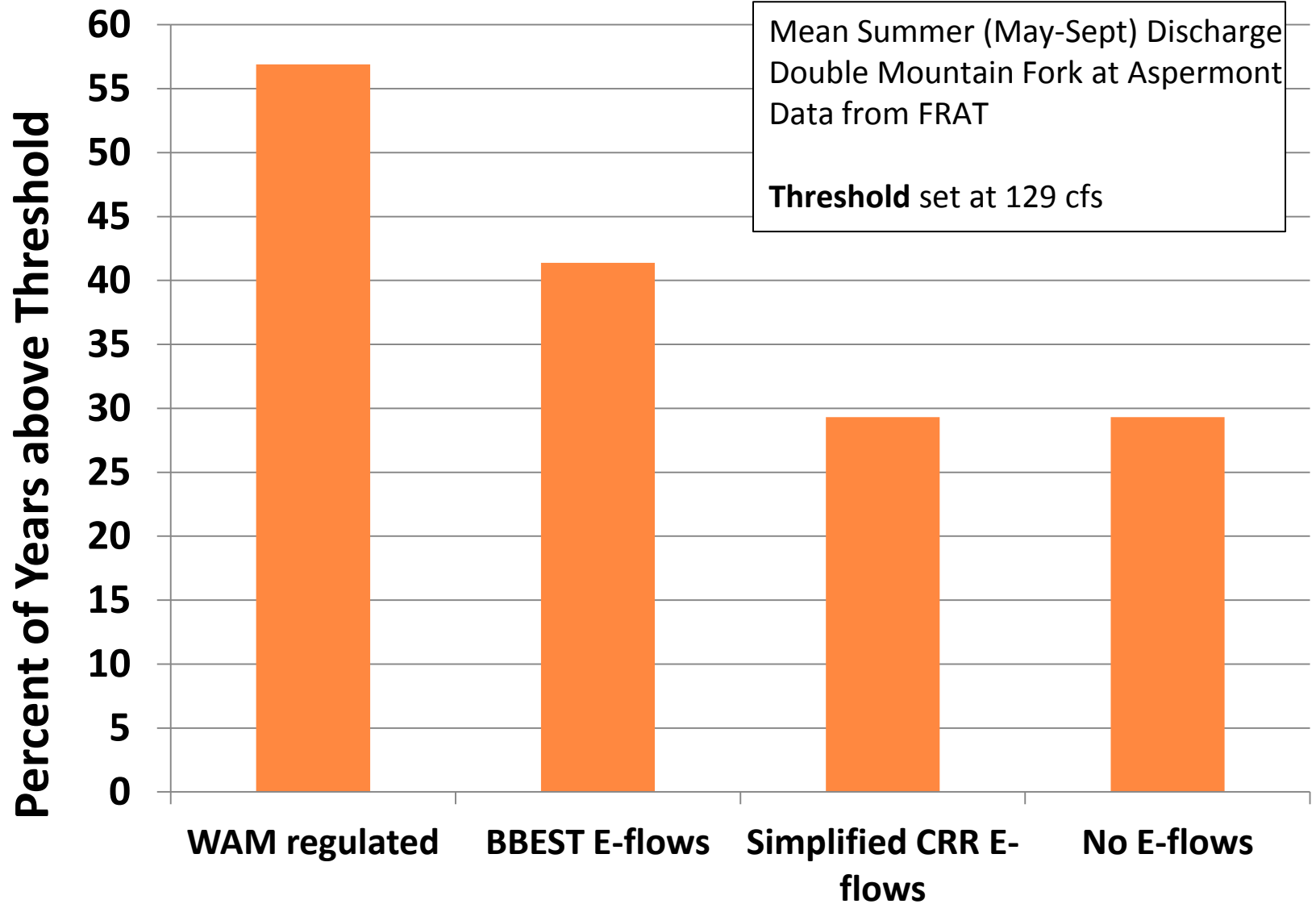
Summary

- **Shiners only live two to three years**
- **Populations increase following wet years and decrease following dry years**
- **Two- or three-year runs of wet or dry years have a compound, multiplicative effect**
- **Mean summer discharge greater than 227 cfs leads to increase**

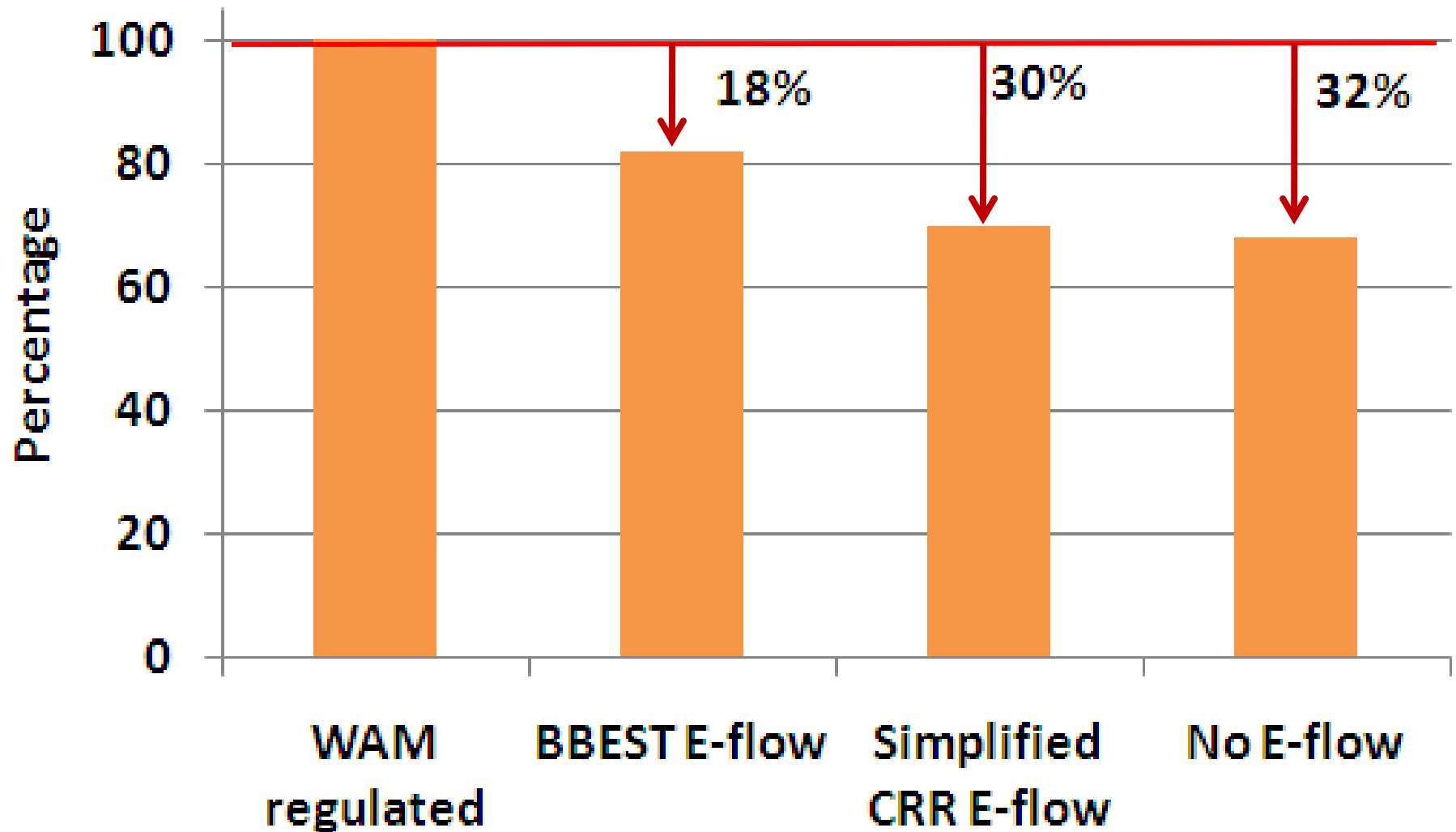
Evaluation Options

- Move “threshold” to Double Mountain Fork at Aspermont
Drainage area ratio: mean summer discharge threshold = 129 cfs
- Evaluate changes in mean summer discharge
- Rerun population dynamics model to assess % change in mean summer discharge, years meeting threshold

Threshold Analysis



Change in Mean Summer Discharge



Conclusions on DMF West

- Upstream extirpation very probable
- Downstream effects = high risk
 - alters streamflow (reduces mean summer discharge)
 - migration blocked
 - shortens reach
- Threshold at Aspermont (129 cfs) not exceeded frequently enough = high risk

Next Steps

- Quantify effects of DMF West releases (FRAT output) on Brazos River at Seymour
- Work with Texas Tech to rerun population dynamics model at Brazos River at Seymour
- Look at each scenario to determine percent reduction in population